

CLAIMS

What is claimed is:

1. An electrical connector assembly for electrically coupling two components, said electrical connector assembly comprising:

a socket coupled to a first component, said socket having at least one segment that includes at least a first conductive engagement member arranged on a first side of a spatial gap and at least a second conductive engagement member arranged on an opposite side of said spatial gap, said second conductive engagement member being electrically isolated from said first conductive engagement member; and

a blade coupled to a second component, said blade having at least one segment that includes at least a first conductive pad arranged on a first side of an insulator and at least a second conductive pad arranged on an opposite side of said insulator, and said blade having a width complementary to the spatial gap of said socket such that when said blade is inserted into said spatial gap said first conductive pad of said blade forms an electrical contact with said first conductive engagement member of said socket and said second conductive pad of said blade forms an electrical contact with said second conductive engagement member of said socket, wherein said first and second conductive pads of said blade are electrically isolated from each other, and wherein said blade comprises first connector mechanisms for electrically coupling said first conductive pad to said second component and second connector mechanisms for electrically coupling said second conductive pad to said second component, wherein said first and second connector mechanisms are off-set from each other.

2. The electrical connector assembly of claim 1 wherein said socket and blade each have a plurality of said segments.

3. The electrical connector assembly of claim 2 wherein said plurality of segments of said blade are electrically isolated from each other and said plurality of segments of said socket are electrically isolated from each other.

4. The electrical connector assembly of claim 1 wherein said at least one segment of said socket comprises a plurality of said conductive engagement members for engaging a common conductive pad of said blade.

5. The electrical connector assembly of claim 1 wherein electrical contact is achievable between the first and second engagement members of said socket and the first and second conductive pads of said blade over a range of distances at which said first and second components may be arranged relative to each other.

6. The electrical connector assembly of claim 1 wherein electrical connection is achievable between the first and second engagement members of said socket and the first and second conductive pads of said blade over a range of insertion distances by which said blade is inserted into the spatial gap of said socket.

7. The electrical connector assembly of claim 1 comprising a wipe of at least 60 mil.

8. The electrical connector assembly of claim 1 wherein said width of said blade is approximately 1.5mm.

9. The electrical connector assembly of claim 1 wherein said second conductive pad is arranged directly opposite said first conductive pad.

10. The electrical connector assembly of claim 1 wherein said first connector mechanisms comprises pins on one side of said insulator that electrically couple the first conductive pad of the blade to said second component, and said second connector mechanisms comprises pins on a side of said insulator opposite said one side that electrically couple the second conductive pad of the blade to said second component, and wherein none of the pins of the first connector mechanisms are arranged directly across from any of the pins of the second connector mechanisms.

11. The electrical connector assembly of claim 1 wherein said first and second components are circuit boards.

12. The electrical connector assembly of claim 11 wherein one of said first and second components comprises a power board having a power supply for supplying power to the other of said first and second components, and wherein said power is supplied from said power board to said other component via said electrical connector assembly.

13. The electrical connector assembly of claim 1 wherein said at least one segment of said socket and blade have a current rating of approximately 25A per electrical contact.

14. The electrical connector assembly of claim 12 wherein said socket and said blade each comprises at least three of said segments, and wherein connector comprises a total current rating of at least 150A.

15. A system comprising:
 a power supply board;
 a circuit board comprising components to be powered at least partially by said power supply board;

an electrical connector for electrically coupling said power supply board with said circuit board for supplying power from the power supply board to said circuit board via said electrical connector, said electrical connector comprising

(a) a socket coupled to one of said power supply board and said circuit board, said socket having at least one segment that includes at least a first conductive engagement member arranged on a first side of a spatial gap and at least a second conductive engagement member arranged on an opposite side of said spatial gap, said second conductive engagement member being electrically isolated from said first conductive engagement member; and

(b) a blade coupled to the other of said power supply board and said circuit board, said blade having at least one segment that includes at least a first conductive pad arranged on a first side of an insulator and at least a second conductive pad arranged on an opposite side of said insulator, and said blade having a width complementary to the spatial gap of said socket such that when said blade is inserted into said spatial gap said first conductive pad of said blade forms an electrical contact with said first conductive engagement member of said socket and said second conductive pad of said blade forms an electrical contact with said second conductive engagement member of said socket, wherein said first and second conductive pads of said blade are electrically isolated from each other;

wherein said power supply board supplies electrical power to said circuit board via said electrical connector by conducting electrical signals of one polarity via said electrical contact between said first conductive engagement member of said socket and said first conductive pad of said blade and by conducting electrical signals of a polarity opposite said one polarity via said electrical contact between said second conductive engagement member of said socket and said second conductive pad of said blade.

16. The system of claim 15 wherein electrical contact is achievable between the first and second engagement members of said socket and the first and second conductive pads of said blade over a range of distances at which said power supply board and said circuit board may be arranged relative to each other.

17. The system of claim 15 wherein electrical connection is achievable between the first and second engagement members of said socket and the first and second conductive pads of said blade over a range of insertion distances by which said blade is inserted into the spatial gap of said socket.

18. The system of claim 15 wherein said electrical connector comprises a wipe of at least 60 mil.

19. The system of claim 15 wherein said width of said blade is no more than 3.5mm.

20. The system of claim 15 wherein said blade comprises first connector mechanisms for electrically coupling said first conductive pad to said other of said power supply board and said circuit board and second connector mechanisms for electrically coupling said second conductive pad to said other of said power supply board and said circuit board, and wherein said first and second connector mechanisms are off-set from each other.

21. The system of claim 15 wherein said blade comprises pins on each side of said insulator that electrically couple the first and second conductive pads of the blade to said other of said power supply board and said circuit board, wherein none of the pins on one side of the insulator are arranged directly across from any of the pins on the opposite side of the insulator.

22. A method of electrically coupling two circuit boards, said method comprising:
 inserting a blade that is coupled to a first circuit board within a spatial gap of a socket that is coupled to a second circuit board such that a first conductive pad and a second conductive pad of said blade that are arranged directly opposite each other on opposing sides of an insulator and that are electrically isolated from each other engage at least a first conductive member and a second conductive member, respectively, of said socket that are arranged on opposite sides of said spatial gap of said socket and that are electrically isolated from each other;

conducting electrical signals of one polarity from one of the first and second circuit boards to the other of the first and second circuit boards via the engagement of the first conductive pad and the first conductive member; and

conducting electrical signals of a polarity opposite said one polarity from one of the first and second circuit boards to the other of the first and second circuit boards via the engagement of the second conductive pad and the second conductive member.

23. The method of claim 22 wherein one of said first and second circuit boards comprises a power board having a power supply for supplying power to the other said first and second circuit boards, wherein said conducting electrical signals comprises:
 supplying power from said power board to said other circuit board.

24. The method of claim 23 wherein said supplying power comprises:
 supplying at least 25A positive and 25A negative.

25. The method of claim 23 wherein said supplying power comprises:
 supplying at least 75A positive and 75A negative.

26. The method of claim 22 wherein said inserting comprises:
 inserting said blade by any amount within a range of insertion distances, wherein said first conductive pad and a second conductive pad of said blade make electrical contact with said at least a first conductive member and a second conductive member, respectively, at any insertion amount within said range of insertion distances.

27. The method of claim 26 wherein said range of insertion distances comprises a range of at least 60 mil.